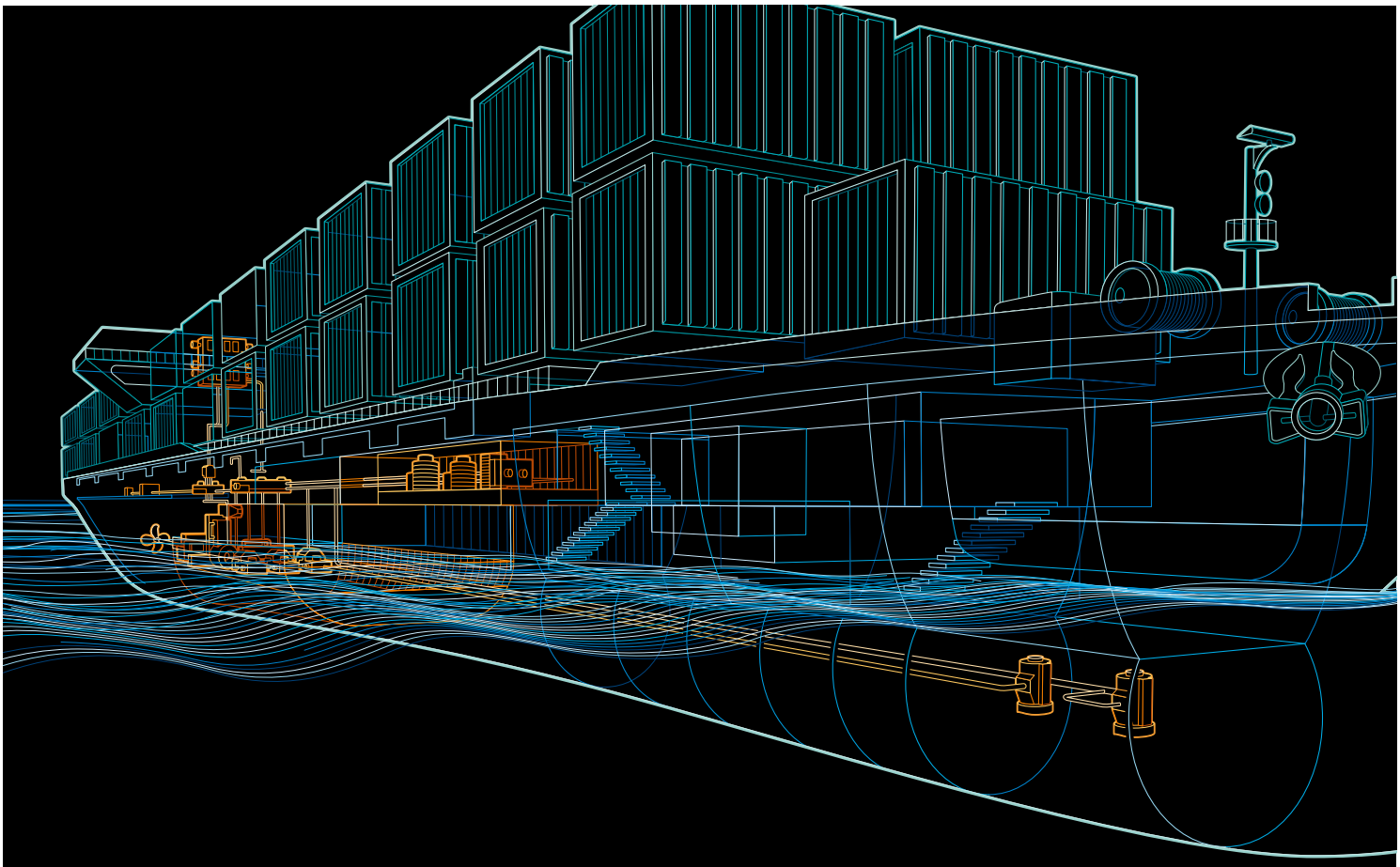

Marine

SEEMP Reporting & Fuel Advisory
Part of ABB's Advisory Systems

Power and productivity
for a better world™

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With ever rising fuel costs and new SEEMP (Ship Energy Efficient Management Plan) regulations within the shipping industry, having an insight in fuel consumption KPI's (Key Performance Indicators) becomes increasingly important for shipping companies.

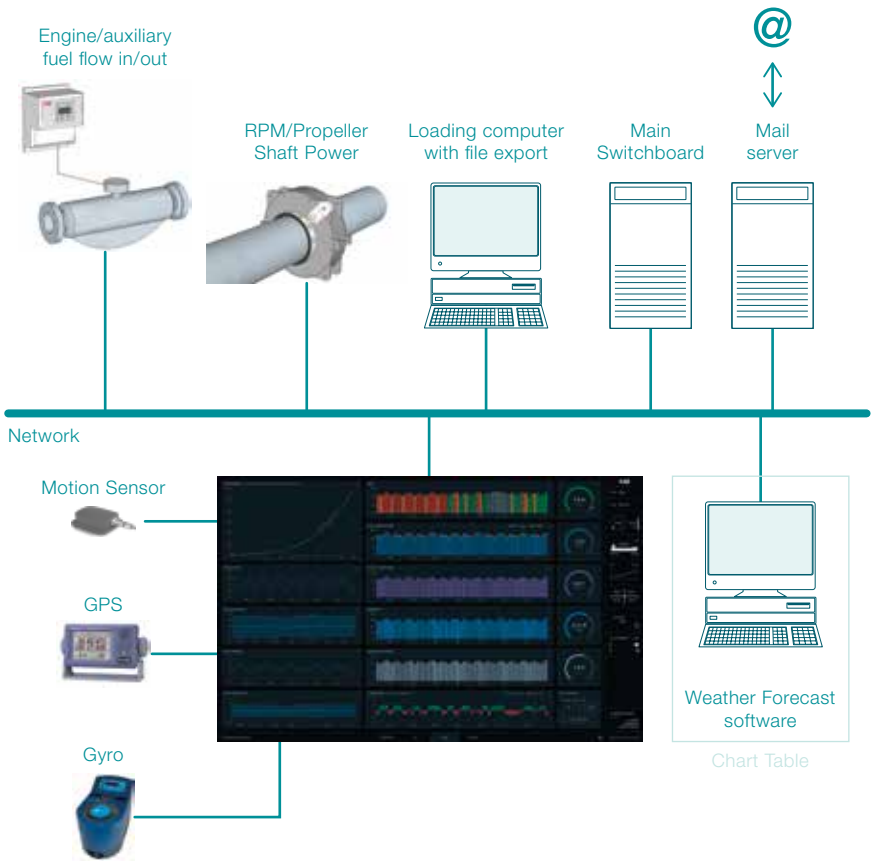
A SEEMP compliant fuel monitoring solution

The SEEMP guideline, which is set-up by the IMO in 2009 and became mandatory in 2013, seeks to improve a ship's energy efficiency through four steps: planning, implementation, monitoring and self-evaluation & improvement. ABB has developed an effective integral approach to tackle these four steps of the SEEMP, making the implementation of the SEEMP very cost effective and simple to execute. ABB's SEEMP compliant fuel monitoring set-up consists of easy to install mixed sensors and a software solution that is capable of measuring and displaying important vessel fuel consumption KPI's and making this data available as well on the vessel as to the onshore operations department.

How is it done?

ABB's Torductor® 500 is primarily a torque measuring device. It measures the torque in a rotating propeller shaft, together with the shaft RPM, and calculates the shaft power and the energy produced by the shaft. By connecting ABB Coriolis Master high performance fuel flow measuring instruments to the Torductor system, the Specific Fuel Oil Consumption (SFOC) is calculated. With increasing fuel prices, propulsion and engine performance, the SFOC has evolved into an important KPI. While the absolute accuracy of any measure-

ment is clearly important, a measurement's long-term stability can matter even more. Any system which tends to drift becomes less accurate over time and needs recalibration. In case of the Torductor system, this problem simply does not exist. Because of its contactless operation, the Torductor has an excellent long-term stability of less than 0.5 % over 10 years. The Coriolis Master instruments, known for their proven high accuracy, low pressure drop and wide flow range, require no compensation for temperature and density. To facilitate the reporting of fuel oil consumption, the Torductor® 500 processes the fuel flow data into a basic report, providing support for noon reports and voyage reports. The flow data are also transferred to the OCTOPUS-Onboard computer for advanced reporting and analysis.



Displaying fuel consumption KPI's

OCTOPUS-Onboard makes it possible to monitor and give insight in the effect on fuel consumption of a change of speed, heading and trim in a given situation. By comparing monitored results over longer periods, the hull and propeller efficiency can be determined, giving insight in the added resistance to determine the best moment for cleaning and/or recoating of the hull. This is all done to make the crew aware of the actual fuel consumption and trends. Detailed and trend information per engine including actual and cumulative fuel consumption per nautical mile are displayed on the OCTOPUS-Onboard monitor. In addition to this the actual and cumulative CO_2 emission are shown.

Fuel-consumption comparison within the fleet

By using OCTOPUS-Online, fuel consumption trends of the whole fleet can be viewed at and analyzed by the onshore operations department. Comparison of individual vessels leads to better and more profound understanding of monitored fuel consumption and the way the vessels are operated by the crew. As a result, the operations or fleet department can implement new criteria within the whole fleet with regards to maximum power consumption and efficient RPM distribution.

Fuel saving speed advisory

In addition to the fuel monitoring package, ABB can also deliver a speed advice for sea-going vessels. Using the in-service determined speed curves and dynamic characteristics of the vessel in combination with weather forecasts and in-depth knowledge about ship motions in waves, an accurate advice can be given on the speed, which results in a just-in-time arrival with minimum costs of fuel. When using the OCTOPUS speed advice, the captain has access to a daily operational KPI report including the required speed to execute the voyage as efficient as possible.

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